U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Megalagrion xanthomelas*

COMMON NAME: Orangeblack Hawaiian Damselfly

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: September 2005

STATUS/ACTION:

____ Species assessment - determined species did not meet the definition of endangered or threatened under the Act and, therefore, was not elevated to Candidate status

____ New candidate

__X_ Continuing candidate

____ Non-petitioned

__X_ Petitioned - Date petition received: May 11, 2004

____ 90-day positive - FR date:

__X_ 12-month warranted but precluded - FR date: May 11, 2005

_N__ Did the petition request a reclassification of a listed species?

FOR PETITIONED CANDIDATE SPECIES:

a. Is listing warranted (if yes, see summary of threats below)?

b. To date, has publication of a proposal to list been precluded by other higher priority listing actions?

c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded. We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions. During the past 12 months, most of our national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements, meeting statutory deadlines for petition findings or listing determinations, emergency listing evaluations and determinations and essential litigation-related, administrative, and program management tasks. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the past 12 months, see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (http://endangered.fws.gov).

____ Listing priority change

Former LP: ____

New LP: ____

Date when the species first became a Candidate (as currently defined): 11/15/1994

____ Candidate removal: Former LP: ____

___ A – Taxon is more abundant or widespread than previously believed or not subject to

the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

___U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.

___ F – Range is no longer a U.S. territory.

___ I – Insufficient information exists on biological vulnerability and threats to support listing.

___ M – Taxon mistakenly included in past notice of review.

___ N – Taxon does not meet the Act's definition of "species."

___ X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Insects; Family Coenagrionidae (damselfly)

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Hawaii, islands of Kauai, Oahu, Molokai, Maui, Lanai, and Hawaii

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Hawaii, islands of Oahu, Maui, Molokai, Lanai, and Hawaii

LAND OWNERSHIP
This species occurs on State managed streams and State, Federal, and private lands.

LEAD REGION CONTACT: Paul Phifer (503) 872-2823, paul_phifer@fws.gov

LEAD FIELD OFFICE CONTACT: Pacific Islands Fish & Wildlife Office, Lorena Wada, (808) 792-9400, lorena_wada@fws.gov

BIOLOGICAL INFORMATION
Species Description: The orangeblack Hawaiian damselfly (*Megalagrion xanthomelas*) is somewhat small in size. Males are bright red in color while females are pale tan in color. Both sexes exhibit strong patterns including striping. The adults measure from 33-37 millimeters (mm) (1.3-1.5 inches (in)) in length and have a wingspan of 35-40 mm (1.4-1.6 in). Immatures of this species exhibit flattened, leaf-like gills (Asquith and Polhemus 1996).

Taxonomy: The orangeblack Hawaiian damselfly was first described by Selys-Longchamps (1876), and the species is recognized as a distinct taxon. Selys-Longchamps is the most recent and accepted taxonomic write up for this species.

Habitat: Historically, the orangeblack Hawaiian damselfly was Hawaii's most abundant species of damselfly, and it utilized a variety of aquatic habitats for breeding sites. In 1913, Perkins describes it as "a common insect in Honolulu gardens and in lowland districts generally, not usually partial to the mountains, though in the Kona district of Hawaii it is common about stagnant pools up to an elevation of about 914 meters (m) (3,000 feet (ft)). It is very numerous in individuals under conditions totally changed from natural." Similar to the crimson Hawaiian

damselfly, the naiads of this species are active swimmers and rest on exposed areas of the bottom on submerged vegetation (Williams 1936). They prefer standing or very slow moving bodies of water, and have been observed breeding in garden pools, large reservoirs, pools of an intermittent stream, a pond formed behind a cobble bar at the seaward terminus of a large stream, and coastal springs, fishponds and freshwater marshes (Polhemus 1994).

Historic and Current Range/Distribution: Historically, this species probably occurred on all the major islands except Kahoolawe (Perkins 1913; Kennedy 1917; Zimmerman 1948b; Polhemus 1994). On Oahu, it was recorded from Honolulu, Kaimuki, Koko Head, Pearl City, Waialua, the Waianae Mountains (Polhemus 1994), and Waianae (Williams 1936). On Molokai, it was known from the following localities: Kainalu, Meyer's Lake on the Kalaupapa peninsula, Kaunakakai, Mapulehu, and Palaau (Polhemus 1994). On Maui, it was recorded from an unspecified locality in the West Maui Mountains (Polhemus 1994; Polhemus *et al.* 1999). On Hawaii, it was known from Hilo, Kona, Naalehu, and Panaewa Forest Reserve (Polhemus 1994). If this species did occur on Kauai it is now believed to be extirpated. Until recently, the last report of the orangeblack Hawaiian damselfly on Oahu was in 1935 (Williams 1936) and it was believed extirpated on this island (Polhemus 1993a). In 1993, a very small population was discovered existing in pools of an intermittent stream at the Tripler Army Medical Facility (Neal Evenhuis, Bishop Museum, *in litt*. 1993; Englund 2001). This is the only known population of this species on Oahu. Populations are known from Molokai at the mouths of Pelekunu and Waikolu streams, and at the Palaau wetlands on the south coast (Polhemus 1994). On Lanai, a large population occurs in an artificial pond at Koele (Polhemus 1994), and a few individuals have been seen at the mouth of Maunalei Stream (Richard Baughman, Brigham Young University, pers. comm. 1995), and around a fishpond at Loko Lopa (Neal Evenhuis, Bishop Museum, pers. comm. 1995). The species is present on the island of Maui at Ukumehame Stream (west Maui) and near anchialine pools located at La Perouse Bay (leeward east Maui) (Polhemus *et al*. 1999). Several large populations exist in coastal wetlands on Hawaii in the following localities: Anaehoomalu Bay, Hawa Bay, Hilea Stream, Hilo, Honokohau, Kiholo Bay, Ninole Springs (Polhemus 1994), Onomea Bay (Asquith 1995), and Whittington Beach (Polhemus 1994).

THREATS:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. Freshwater habitats on all the main Hawaiian Islands have been severely altered and degraded because of past and present land and water management practices including agriculture, urban development, development of ground water, perched aquifer and surface water resources (USFWS 1985, 1995; Harris *et al.* 1993; Meier *et al.* 1993).

Extensive modification of lentic (standing water) habitats in the Hawaiian Islands began about 1100 AD with a rapid population increase among native Hawaiians (Kirch 1982). Hawaiians cultivated taro (*Colocasia esculenta*) by creating shallow, walled ponds called loi, in marshes and riparian areas (Handy and Handy 1972). By 1778, virtually all valley bottoms with permanent stream flow and most basin marshes were converted to irrigated taro cultivation (Handy and Handy 1972). Hawaiians also modified wetlands by constructing

fishponds, many of which were primarily fresh water, fed by streams or springs (Summers 1964). Despite this habitat modification by early Hawaiians, many areas of extensive marsh land remained intact and were utilized by the native damselflies.

Eventually, many of the wetlands formerly used for taro or rice were drained and filled for dry-land agriculture (Stone 1989; Meier *et al*. 1993). Most urban, residential and resort development in Hawaii has occurred in the coastal plains and as a result, many freshwater lentic habitats have been negatively affected (USFWS 1985). By 1990, the Service estimated that 30 percent of all coastal plain wetlands in Hawaii had been lost to agriculture and urban development (Ernie Kosaka, USFWS, *in litt.* 1990), and if only freshwater habitat was considered the loss would be proportionately much higher, probably approaching 80 to 90 percent. Low elevation wetlands are now estimated to be 75 percent lost or significantly degraded (Terrell Ericson, U.S. Department of Agriculture, Honolulu, pers. comm. 2004).

While intentional filling of freshwater wetlands with open water is rarely permitted today (Gordon Smith, USFWS, pers. comm. 2004), loss of smaller areas utilized by damselflies, such as narrow strips of freshwater seeps within anchialine pool complexes, and loss of emergent vegetation still occurs. what causes the loss of these smaller areas? In addition, marshes are slowly filled and converted to meadow habitat due to increased sedimentation resulting from increased storm water runoff from upslope development, and blockage of downslope drainage (Wilson, Okamoto and Associates, Inc. 1993).

Presently the most significant threat to the remaining natural ponds and marshes in Hawaii is the nonnative species, California grass (*Brachiaria mutica*). The area of origin of this sprawling perennial grass is unknown, but it was first noted on Oahu in 1924 and now occurs on all the major islands (O'Connor 1990). This plant forms dense, monotypic stands that can completely eliminate any open water by layering of its trailing stems (Smith 1985). The most extensive remaining marsh system on the island of Oahu, Kawainui, is now almost entirely choked with California grass, facilitating its conversion to meadowland (Wilson Okamoto & Associates, Inc. 1993). The James Campbell and Pearl Harbor National Wildlife Refuges on Oahu and Kakahaia National Wildlife Refuge on Molokai must be constantly managed to control this plant (M. Silbernagle, USFWS, pers. comm. 2004).

Similar to the loss of wetlands in Hawaii, the loss of streams has been significant and began with the early Hawaiians who modified stream systems by diverting water to irrigate taro. However, these Hawaiian-made diversions were closely regulated and were not allowed to take more than half the stream flow, and diversions were typically periodic to flood taro rather than continuous (Handy and Handy 1972).

The advent of plantation sugarcane cultivation in 1835 led to more extensive stream diversions. These systems were typically designed to tap water at upper elevations (> 300 m (984 ft)) by means of a concrete weir in the stream. All or most of the low or average flow of the stream is diverted into fields or reservoirs (Takasaki *et al*. 1969; Harris *et al*. 1993). By the 1930s, major water diversions had been developed on all the major islands and currently one third of Hawaii's perennial streams are diverted (Hawaii Stream Assessment 1990).

In addition to diverting water for agriculture and domestic water supply, streams have also been diverted for use in hydroelectric power. There are currently 18 active hydroelectric plants operating on Hawaiian streams, with an additional site proposed for construction, and another 28 sites identified for potential development (Hawaii Stream Assessment 1990; Gordon Smith, USFWS, pers. comm. 2004).

In addition to diverting surface flow in the stream channels, the perched aquifers which feed the streams have also been tapped by means of tunnels (Stearns and Vaksvik 1935; Stearns 1985). For example, both the bore tunnels and the contour tunnel of the Waiahole Ditch system pierced perched aquifers which were drained to the level of the tunnels (Stearns and Vaksvik 1935). Many of these aquifers were also the sources of springs which contributed flow to the windward streams. The draining of these aquifers caused many of the springs to dry up, including some over 0.5 kilometer (0.3 mile) away from the bore tunnels (Stearns and Vaksvik 1935).

In addition to the loss of streams, most remaining streams have undergone and continue to be seriously degraded. Stream degradation has been particularly severe on the island of Oahu, where, in 1978, 57 percent of the perennial streams had been channelized (lined, partially lined or altered stream course) and 89 percent of the total length of these streams were channelized (Parrish *et al.* 1984). Channelization of streams has not been restricted to lower reaches. The channelization process results in removal of riparian vegetation, increased velocity, increased illumination, and higher water temperatures.

Although some control of California grass is occurring on refuges, no conservation measures have been taken to address these threats where the orangeblack Hawaiian damselfly occurs.

B. Over-utilization for commercial, recreational, scientific, or educational purposes.
We are unaware of any current threats to this species resulting from over-utilization.

C. Disease or predation.
Similar to the aquatic insects, Hawaii has a depauperate freshwater fish fauna with only five native species comprised of gobies (Gobiidae) and sleepers (Eleotridae) that occur on all the major islands. Information on these five species indicates that the Hawaiian damselflies probably experienced limited natural predation pressure from the native fishes. Conversely, fish predation has been an important factor in the evolution of behavior in damselfly naiads in continental systems (Johnson 1991). Some species of damselflies, including the native Hawaiian species, are not adapted to cohabitate with some fish species, and are found only in bodies of water without fish (Henrickson 1988; McPeek 1990a). The naiads of these species tend to occupy more exposed positions and engage in conspicuous foraging behavior, thereby being susceptible to fish (Macan 1977; McPeek 1990b). Hawaiian damselflies evolved with few, if any predatory fish, and the exposed behavior of most of the fully aquatic species, makes them particularly vulnerable to predation by nonnative fish introductions.

Over 70 species of fish have been introduced into Hawaiian freshwater habitats, (Devick

1991; Staples and Cowie 2001; Englund 2004;). The impact of fish introductions prior to 1900 cannot be assessed because this predated the initial collection of damselflies in Hawaii (Perkins 1913). In 1905, two species, the mosquito fish (*Gambusia affinis*) and the sailfin molly (*Poecilia latipinna*), were successfully introduced for biological control of mosquitoes (Van Dine 1907). In 1922, three additional species were established for mosquito control, the green swordtail (*Xiphophorus helleri*), the moonfish (*Xiphophorus maculatus*) and the guppy (*Poecilia reticulata*). The introduction of these species has been implicated in the extirpation of the Pacific Hawaiian damselfly (*Megalagrion pacificum*) from most of the main islands (Moore and Gagne 1982), and by 1935 on Oahu, the orangeblack Hawaiian damselfly was found only in waters without these introduced fish (Williams 1936; Zimmerman 1948a, Polhemus 1993; Englund 1998). Most of the fish introduced early into Hawaii are now established on all the major islands, and are primarily pond and reservoir inhabitants.

Beginning in about 1980, a large number of new fish introductions began in Hawaii, originating primarily from the aquarium fish trade (Devick 1991). By 1990, an additional 15 species of fish were established in waters on Oahu, including catfish, cichlids, gobies, top minnows, and needlefish, many of which readily invaded stream systems. By early 1990, the lower to middle reaches of two widely separated streams on Oahu, Manoa on the south leeward side, and Kaukonahua on the north windward side, were choked with dense populations of armored catfish (*Hypostomus* sp. and *Pterygoplichthys multiradiatus*) (Devick 1991). This recent wave of fish introductions on Oahu corresponded with the drastic decline and range reduction of the crimson Hawaiian damselfly (*Megalagrion leptodemas*), the oceanic Hawaiian damselfly (*Megalagrion oceanicum*), and the blackline Hawaiian damselfly (*Megalagrion nigrohamatum nigrolineatum*). Currently, these damselflies occur only in drainages or higher parts of stream systems where nonnative fish are not yet established (Englund and Polhemus 1994; Englund 2004). Some Hawaiian damselfly species are now reduced to a habitat less than 95 meters in length and which lacks invasive fish species (Englund 2004). The continued introduction and establishment of new species of nonnative fish, and the movement of established species to new drainages (Richard Brock, University of Hawaii, pers. comm. 1994) presents the greatest threat to this Hawaiian damselfly species.

Backswimmers are aquatic true bugs (Heteroptera) in the family Notonectidae, so called because they swim upside down. Backswimmers are voracious predators and frequently feed on prey much larger than themselves, tadpoles, small fish, and other aquatic insects including damselfly naiads (Borror *et al*. 1989). Backswimmers are not native to Hawaii, but several species have been introduced in recent times. *Buenoa pallipes* (Fabricus) (no common name) has been known from Hawaii since 1900 (Zimmerman 1948c) and has been recorded from all the major islands except Lanai (Nishida 1994). This species can be abundant in lowland ponds and reservoirs and feeds on any suitably sized insect, including damselfly naiads. More recently, two additional species of backswimmers have become established in Hawaii (Polhemus 1995). *Anisops kuroiwae* was first collected in 1991 and is known only from Maui. *Notonecta indica* was first collected on Oahu in the mid 1980s and is presently known from Maui and Hawaii. Species of *Notonecta* are known to prey on damselfly naiads and the

mere presence of this predator in the water can cause naiads to reduce foraging (Heads 1985) which can reduce growth, development, and survival (Heads 1986). Backswimmers pose a threat to all populations of all Hawaiian stream-dwelling damselfly species.

Another nonnative aquatic insect group, the Trichoptera, (or caddisflies), has recently expanded its number of species and range throughout the Hawaiian Islands. As of 2001 a fourth species from this nonnative group appeared in the islands (Flint *et al*. 2003). It is suspected that the introduced caddisflies are adversely impacting native aquatic invertebrate populations either through competition for space and resources, or due to the caddisflies' large body size and sheer abundance in Hawaiian streams (Flint *et al*. 2003). In recent surveys of upper elevation Kauai streams for example, one caddisfly species accounted for 57 percent of the biota collected in the streams (Englund *et al*. 2000). Caddisflies now inhabit all of the 57 perennial streams on the island of Oahu (Flint *et al*. 2003).

Predation from introduced fish, crustaceans, and possibly nonnative birds such as bulbuls, cardinals and mynas may also pose a threat to all life phases of the orangeblack Hawaiian damselfly (D. Preston, Bishop Museum, pers. comm. 2005).

No conservation measures have been taken to address these threats for this species.

D. The inadequacy of existing regulatory mechanisms.
The State of Hawaii considers all natural flowing surface water (streams, springs and seeps) as State property (Hawaii Revised Statutes 174c 1987), and the Hawaii Department of Land and Natural Resources has management responsibility for the aquatic organisms in these waters (B. Devick, pers. comm. 1995). Thus, damselfly populations associated with streams, seeps and springs are under the jurisdiction of the State of Hawaii, regardless of the ownership of the property across which the stream flows. This includes all populations of the crimson Hawaiian damselfly, the blackline Hawaiian damselfly, and the oceanic Hawaiian damselfly, as well as some populations of the Pacific Hawaiian damselfly and the orangeblack Hawaiian damselfly occurring in streams.

State regulatory mechanisms currently in effect do not provide adequate protection for native Hawaiian damselflies or their habitat. The State of Hawaii has not listed these damselflies as endangered or threatened and so does not afforded them any protection under the State endangered species act. Nor does the State Water Code afford adequate protection from the adverse effects of water development projects. The State of Hawaii manages the use of surface and ground water resources through the Commission on Water Resource Management (Water Commission), as mandated by the 1987 State Water Code (State Water Code, Hawaii Revised Statutes Chapter 174C-71, 174C-81-87, and 174C-9195 and Administrative Rules of the State Water Code, Title 13, Chapters 168 and 169). In the State Water Code, there are no formal requirements that project proponents or the Water Commission protect the habitats of fish and wildlife prior to issuance of a permit to modify surface or ground water resources.

The maintenance of instream flow, which is required to protect the habitat of damselflies and

other aquatic wildlife, is regulated by the establishment of standards on a stream-by-stream basis (State Water Code, Hawaii Revised Statutes Chapter 174C-71 and Administrative Rules of the State Water Code, Title 13, Chapter 169). Currently, the interim instream flow standards represent the existing flow conditions in streams in the State as of 15 June 1988 for Molokai, Hawaii, Kauai and east Maui, and 19 October 1988 for west Maui and leeward Oahu (Administrative Rules of the State Water Code, Title 13, Chapter 169-44-49). However, the State Water Code does not provide for permanent or minimal instream flow standards for the protection of aquatic wildlife. Instead, modification of instream flow standards and stream channels can be undertaken at any time by the Water Commission or via public petitions to revise flow standards or modify stream channels in a specified stream (Administrative Rules of the State Water Code, Title 13, Chapter 169-36). Additionally, the Water Commission must consider economic benefits gained from out-of-stream water uses, and is not required to balance these benefits against instream benefits to aquatic fish and wildlife. Consequently, any stabilization of stream flow for the protection of Hawaiian damselfly habitat is subject to modification at a future date.

The natural value of Hawaii's stream systems have been recognized under the State of Hawaii Instream Use Protection Program (Administrative Rules of the State Water Code, Title 13, Chapter 169-20(2)). In the Hawaii Stream Assessment Report (1990), prepared in coordination with the National Park Service, the State Water Commission identified high quality rivers or streams, or portions of rivers or streams that may be placed within a wild and scenic river system. This report recommended that streams meeting certain criteria be protected from further development. However, there is no formal or institutional mechanism within the Water Code to designate and set aside these streams, or to identify and protect stream habitat for Hawaiian damselflies.

Existing Federal regulatory mechanisms that may protect Hawaiian damselflies and their habitat are also inadequate. The Federal Energy Regulatory Commission (FERC) has very limited jurisdiction in Hawaii. Hydroelectric power projects in Hawaii are not on navigable water, public lands, or United States reservations; do not use surplus water or water power from a Federal government dam; and do not affect the interests of interstate or foreign commerce. Thus, licensing of hydroelectric projects do not come under the purview of FERC. However, hydropower developers in Hawaii may voluntarily seek licensing under FERC.

The U.S. Army Corps of Engineers (COE) also has some regulatory control over modifications of freshwater streams in the United States. For modifications (i.e., discharge of fill) of streams with an average annual flow greater than 5 cubic feet per second (cfs), the COE can issue individual permits under Section 404 of the Clean Water Act. These permits are subject to public review, and must comply with the Environmental Protection Agency's 404(b)(1) guidelines and public comment requirements. However, in issuing these permits, the COE does not establish instream flow standards as a matter of policy. The COE normally considers that the public interest for instream flow is represented by the state water allocation rights or preferences (Regulatory Guidance Letter No 85-6), and project alternatives that supersede, abrogate, or otherwise impair the state water quantity allocations are not normally

addressed as alternatives during permit review.

In cases where the COE district engineer does propose to impose instream flow standard on an individual permit, this flow standard must reflect a substantial national interest. Additionally, if this instream flow standard is in conflict with a State water quantity allocation, then it must be reviewed and approved by the Office of the Chief Engineer in Washington, D.C. Currently, the setting of instream flow standards sufficient to conserve Hawaiian damselflies is not a condition that would be considered or included in an individual permit.

The COE may also authorize the discharge of fill into streams with an average annual flow of less than 5 cfs. These discharges are covered under a nationwide permit (33 CFR 330 Appendix A, Nationwide Permit 26). This permit is designed to expedite small scale activities that the COE considers to have only minimal environmental impacts (33 CFR 330.1(b)). The USFWS and State Department of Land and Natural Resources have only 15 days to provide substantive site-specific comments prior to the issuance of a nationwide permit (33 CFR 330 Appendix A, Nationwide Permit Condition 13). Given the complexity of the impacts on Hawaiian damselflies from stream modifications and surface water diversions, the remoteness of project sites, and the types of studies necessary to determine project impacts and mitigation, this limited comment period does not allow for an adequate assessment of impacts.

E. Other natural or manmade factors affecting its continued existence.
We are unaware of any other threats from other natural or manmade factors affecting this species.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED

The USFWS has cooperated with the Office of Veterans Affairs and the U.S. Army to protect the last remaining population on Oahu. Mitigation measures were successful in preventing the extirpation of the population during a construction project but measures for the long-term maintenance for this population are not in place (Ogden Environmental and Energy Service 1994). Through funding by the Pacific Islands Fish and Wildlife Office and in cooperation with entomologists of the Bishop Museum, Honolulu, Hawaii, a translocation effort began July 2003 to establish a second population of this species within a nearby stream located in Makiki, island of Oahu. The translocation site lacked alien predatory fish and crustaceans (including the introduced shrimp, *Neocaridina denticulate sinensis*), contained the native shrimp, *Atyoida bisulcata*, and was remote enough to minimize human disturbances. On July 18, 2003, thirty-five adults and thirty late instars were collected from Tripler Army Medical Facility (TAMF) and transported to an unnamed tributary of Makiki Stream. On August 18, 2003, a single marked male was seen on vegetation close to the translocation site. An additional thirty-three adults were collected from TAMF and moved to Makiki on August 23, 2004 (D. Preston, pers. comm. 2005).

Additional translocation sites were located but were not used due to predatory fish and crustaceans found in the area.

In addition, we are seeking State approval for the use of a pesticide to remove nonnative fish in order to renovate and recover streams and other bodies of water for damselflies.

SUMMARY OF THREATS
The greatest threats to the orangeblack Hawaiian damselfly are loss of suitable habitat and predatory nonnative fish. There are no efforts being undertaken to address these threats for this species.

LISTING PRIORITY:

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	**Imminent**	Monotypic genus	7
		Species	**8 ***
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Rationale for listing priority number:

Magnitude:

This species is moderately threatened throughout its range by habitat loss and by predation by nonnative fish. These threats occur in varying degrees range-wide and there are no efforts being done to control or eradication nonnative fish or to stop the loss of habitat.

Imminence:

Threats to the orangeblack Hawaiian damselfly from loss of habitat and introduced nonnative fish are considered imminent because they are on-going.

Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed? yes

Is Emergency Listing Warranted? No. The species does not appear to be appropriate for emergency listing at this time because the immediacy of the threats is not so great as to imperil a significant proportion of the taxon within the time frame of the routine listing process. If it becomes apparent that the routine listing process is not sufficient to prevent large losses that may result in this species' extinction, then the emergency rule process for this species will be initiated. We will continue to monitor the status of the orangeblack Hawaiian damselfly as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures.

DESCRIPTION OF MONITORING

We conducted literature searches for recent articles on this species and contacted relevant species experts, U.S. Geological Survey-Biological Resources Discipline, U.S. Army, State officials with the Department of Land and Natural Resources, and Bishop Museum, University of Hawaii, and National Museum of Natural History researchers regarding the current status of this species. The literature search revealed that this species was rediscovered in 1997 in west Maui at Ukumehame Stream and collected for the first time in leeward east Maui near anchialine pools at La Perouse Bay during surveys (Polhemus *et al*. 1999). The literature search also revealed that this species was collected during stream surveys on the island of Molokai during the years 2000 and 2002 at Pelekunu Stream (Englund 2000; Englund and Arakaki 2003).

This level of monitoring is appropriate to update the status of the species because a thorough literature search was conducted as well as relevant species experts contacted. Information contained in this assessment form was verified and any updated information incorporated. The Hawaii Biodiversity and Mapping Program lists this subspecies as critically imperiled to vulnerable (Hawaii Biodiversity and Mapping Program database 2004). This species is not listed in the International Union for Conservation of Nature and Natural Resources Red Data List database (International Union for Conservation of Nature and Natural Resources database 2004).

List of Experts Contacted:

Name	Date	Place of Employment
Adam Asquith	July 12, 2005	University of Hawaii
Vince Costello	July 13, 2005	U.S. Army
Ronald Englund	July 12, 2005	Bishop Museum
David Foote	July 12, 2005	U.S. Geological Survey, BRD
Betsy Gagne	July 12, 2005	Hawaii Dept of Land and Natural Resources
Michael Kido	July 12, 2005	University of Hawaii
Robert Nishimoto	July 13, 2005	Hawaii Dept of Land and Natural Resources
David Preston	July 12, 2005	Bishop Museum
Dan Polhemus	July 12, 2005	National Museum of Natural History

List of Databases Searched:

Name	Date
Hawaii Biodiversity and Mapping Program	2004
International Union for Conservation of Nature and Natural Resources database	2004

COORDINATION WITH STATES

In October 2004 we provided the Division of Forestry and Wildlife Administrator, Paul Conry, with copies of our most recent candidate assessment forms for his review and comment. In addition, copies of the candidate forms were sent to Betsy Gagne, Executive Secretary for the Hawaii Natural Area Reserves System Commission. Ms. Gagne reviewed the information for this species and provided no additional information or corrections (B. Gagne, pers. comm. 2005).

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APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve: Acting _____ 11/16/05
Regional Director, Fish and Wildlife Service Date

Concur: _____ August 23, 2006
Director, Fish and Wildlife Service Date

Do not concur: _____ _____
Director, Fish and Wildlife Service Date

Date of annual review: 8/4/05

Conducted by: Lorena Wada, Pacific Islands FWO

Comments:

PIFWO Review

Reviewed by: Gina Shultz Date: 10/12/05
Assistant Field Supervisor, Endangered Species

Patrick Leonard Date: 10/11/05
Field Supervisor